

## SEQUENCE LISTING

<110> Deutsches Institut für Ernährungsforschung  
Postdam-Rehbrücke

<120> Bitter taste receptors

<130> D30115PCT

<150> US 60/413298

<151> 2002-09-25

<160> 52

<170> PatentIn version 3.2

<210> 1

<211> 333

<212> PRT

<213> Homo sapiens

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Asn Ala Phe Val Phe Leu Val Asn Phe Trp Asp Val Val Lys Arg Gln  
35 40 45

Ala Leu Ser Asn Ser Asp Cys Val Leu Leu Cys Leu Ser Ile Ser Arg  
50 55 60

Leu Phe Leu His Gly Leu Leu Phe Leu Ser Ala Ile Gln Leu Thr His  
65 70 75 80

Phe Gln Lys Leu Ser Glu Pro Leu Asn His Ser Tyr Gln Ala Ile Ile  
85 90 95

Met Leu Trp Met Ile Ala Asn Gln Ala Asn Leu Trp Leu Ala Ala Cys  
100 105 110

Leu Ser Leu Leu Tyr Cys Ser Lys Leu Ile Arg Phe Ser His Thr Phe  
115 120 125

Leu Ile Cys Leu Ala Ser Trp Val Ser Arg Lys Ile Ser Gln Met Leu  
130 135 140

Leu Gly Ile Ile Leu Cys Ser Cys Ile Cys Thr Val Leu Cys Val Trp  
145 150 155 160

Cys Phe Phe Ser Arg Pro His Phe Thr Val Thr Thr Val Leu Phe Met  
 165 170 175

Asn Asn Asn Thr Arg Leu Asn Trp Gln Asn Lys Asp Leu Asn Leu Phe  
 180 185 190

Tyr Ser Phe Leu Phe Cys Tyr Leu Trp Ser Val Pro Pro Phe Leu Leu  
 195 200 205

Phe Leu Val Ser Ser Gly Met Leu Thr Val Ser Leu Gly Arg His Met  
 210 215 220

Arg Thr Met Lys Val Tyr Thr Arg Asn Ser Arg Asp Pro Ser Leu Glu  
 225 230 235 240

Ala His Ile Lys Ala Leu Lys Ser Leu Val Ser Phe Phe Cys Phe Phe  
 245 250 255

Val Ile Ser Ser Cys Val Ala Phe Ile Ser Val Pro Leu Leu Ile Leu  
 260 265 270

Trp Arg Asp Lys Ile Gly Val Met Val Cys Val Gly Ile Met Ala Ala  
 275 280 285

Cys Pro Ser Gly His Ala Ala Ile Leu Ile Ser Gly Asn Ala Lys Leu  
 290 295 300

Arg Arg Ala Val Met Thr Ile Leu Leu Trp Ala Gln Ser Ser Leu Lys  
 305 310 315 320

Val Arg Ala Asp His Lys Ala Asp Ser Arg Thr Leu Cys  
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 <213> Homo sapiens

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 <213> Homo sapiens

<400> 3

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Arg Met Thr Lys Leu Cys Asp Pro Ala Glu Ser Glu Leu Ser Pro Phe
                20                               25                               30

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Leu Ile Thr Leu Ile Leu Ala Val Leu Leu Ala Glu Tyr Leu Ile Gly
35                               40                               45

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Ile Ile Ala Asn Gly Phe Ile Met Ala Ile His Ala Ala Glu Trp Val
50                               55                               60

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Gln Asn Lys Ala Val Ser Thr Ser Gly Arg Ile Leu Val Phe Leu Ser
65                               70                               75                               80

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Val Ser Arg Ile Ala Leu Gln Ser Leu Met Met Leu Glu Ile Thr Ile
85                               90                               95

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Ser Ser Thr Ser Leu Ser Phe Tyr Ser Glu Asp Ala Val Tyr Tyr Ala
100                               105                               110

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Phe Lys Ile Ser Phe Ile Phe Leu Asn Phe Cys Ser Leu Trp Phe Ala
115                               120                               125

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Ala Trp Leu Ser Phe Phe Tyr Phe Val Lys Ile Ala Asn Phe Ser Tyr
130                               135                               140

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Pro Leu Phe Leu Lys Leu Arg Trp Arg Ile Thr Gly Leu Ile Pro Trp  
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 Leu Leu Trp Leu Ser Val Phe Ile Ser Phe Ser His Ser Met Phe Cys  
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 Ile Asn Ile Cys Thr Val Tyr Cys Asn Asn Ser Phe Pro Ile His Ser  
 180 185 190  
 Ser Asn Ser Thr Lys Lys Thr Tyr Leu Ser Glu Ile Asn Val Val Gly  
 195 200 205  
 Leu Ala Phe Phe Phe Asn Leu Gly Ile Val Thr Pro Leu Ile Met Phe  
 210 215 220  
 Ile Leu Thr Ala Thr Leu Leu Ile Leu Ser Leu Lys Arg His Thr Leu  
 225 230 235 240  
 His Met Gly Ser Asn Ala Thr Gly Ser Asn Asp Pro Ser Met Glu Ala  
 245 250 255  
 His Met Gly Ala Ile Lys Ala Ile Ser Tyr Phe Leu Ile Leu Tyr Ile  
 260 265 270  
 Phe Asn Ala Val Ala Leu Phe Ile Tyr Leu Ser Asn Met Phe Asp Ile  
 275 280 285  
 Asn Ser Leu Trp Asn Asn Leu Cys Gln Ile Ile Met Ala Ala Tyr Pro  
 290 295 300  
 Ala Ser His Ser Ile Leu Leu Ile Gln Asp Asn Pro Gly Leu Arg Arg  
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<212> DNA

<213> Homo sapiens

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<210> 5
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<212> PRT
<213> Homo sapiens

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<400> 5

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Met Ala Thr Val Asn Thr Asp Ala Thr Asp Lys Asp Ile Ser Lys Phe
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Lys Val Thr Phe Thr Leu Val Val Ser Gly Ile Glu Cys Ile Thr Gly
20           25           30

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Ile Leu Gly Ser Gly Phe Ile Thr Ala Ile Tyr Gly Ala Glu Trp Ala
35           40           45

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Arg Gly Lys Thr Leu Pro Thr Gly Asp Arg Ile Met Leu Met Leu Ser
50           55           60

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Phe Ser Arg Leu Leu Leu Gln Ile Trp Met Met Leu Glu Asn Ile Phe
65           70           75           80

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Ser Leu Leu Phe Arg Ile Val Tyr Asn Gln Asn Ser Val Tyr Ile Leu
85           90           95

```

Phe Lys Val Ile Thr Val Phe Leu Asn His Ser Asn Leu Trp Phe Ala  
 100 105 110

Ala Trp Leu Lys Val Phe Tyr Cys Leu Arg Ile Ala Asn Phe Asn His  
 115 120 125

Pro Leu Phe Phe Leu Met Lys Arg Lys Ile Ile Val Leu Met Pro Trp  
 130 135 140

Leu Leu Arg Leu Ser Val Leu Val Ser Leu Ser Phe Ser Phe Pro Leu  
 145 150 155 160

Ser Arg Asp Val Phe Asn Val Tyr Val Asn Ser Ser Ile Pro Ile Pro  
 165 170 175

Ser Ser Asn Ser Thr Glu Lys Lys Tyr Phe Ser Glu Thr Asn Met Val  
 180 185 190

Asn Leu Val Phe Phe Tyr Asn Met Gly Ile Phe Val Pro Leu Ile Met  
 195 200 205

Phe Ile Leu Ala Ala Thr Leu Leu Ile Leu Ser Leu Lys Arg His Thr  
 210 215 220

Leu His Met Gly Ser Asn Ala Thr Gly Ser Arg Asp Pro Ser Met Lys  
 225 230 235 240

Ala His Ile Gly Ala Ile Lys Ala Thr Ser Tyr Phe Leu Ile Leu Tyr  
 245 250 255

Ile Phe Asn Ala Ile Ala Leu Phe Leu Ser Thr Ser Asn Ile Phe Asp  
 260 265 270

Thr Tyr Ser Ser Trp Asn Ile Leu Cys Lys Ile Ile Met Ala Ala Tyr  
 275 280 285

Pro Ala Gly His Ser Val Gln Leu Ile Leu Gly Asn Pro Gly Leu Arg  
 290 295 300

Arg Ala Trp Lys Arg Phe Gln His Gln Val Pro Leu Tyr Leu Lys Gly  
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Gln Thr Leu

<210> 6

<211> 969

<212> DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 6

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gccatctatg gggctgagtg ggccaggggc aaaacactcc ccactggtga ccgcattatg      180
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gggatcttcg ttctctgat catgttcata ctggcagcca ccctgctgat cctctctctc      660
aagagacaca ccctacacat gggaagcaat gccacagggt ccagggaccc cagcatgaag      720
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&lt;210&gt; 7

&lt;211&gt; 307

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 7

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Met Gln Ala Ala Leu Thr Ala Phe Phe Val Leu Leu Phe Ser Leu Leu
1           5           10           15

Ser Leu Leu Gly Ile Ala Ala Asn Gly Phe Ile Val Leu Val Leu Gly
20          25          30

Arg Glu Trp Leu Arg Tyr Gly Arg Leu Leu Pro Leu Asp Met Ile Leu
35          40          45

Ile Ser Leu Gly Ala Ser Arg Phe Cys Leu Gln Leu Val Gly Thr Val
50          55          60

His Asn Phe Tyr Tyr Ser Ala Gln Lys Val Glu Tyr Ser Gly Gly Leu
65          70          75          80

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Gly Arg Gln Phe Phe His Leu His Trp His Phe Leu Asn Ser Ala Thr  
                   85                  90                  95

Phe Trp Phe Cys Ser Trp Leu Ser Val Leu Phe Cys Val Lys Ile Ala  
           100                  105                  110

Asn Ile Thr His Ser Thr Phe Leu Trp Leu Lys Trp Arg Phe Leu Gly  
           115                  120                  125

Trp Val Pro Trp Leu Leu Leu Gly Ser Val Leu Ile Ser Phe Ile Ile  
           130                  135                  140

Thr Leu Leu Phe Phe Trp Val Asn Tyr Pro Val Tyr Gln Glu Phe Leu  
   145                  150                  155                  160

Ile Arg Lys Phe Ser Gly Asn Met Thr Tyr Lys Trp Asn Thr Arg Ile  
                   165                  170                  175

Glu Thr Tyr Tyr Phe Pro Ser Leu Lys Leu Val Ile Trp Ser Ile Pro  
                   180                  185                  190

Phe Ser Val Phe Leu Val Ser Ile Met Leu Leu Ile Asn Ser Leu Arg  
           195                  200                  205

Arg His Thr Gln Arg Met Gln His Asn Gly His Ser Leu Gln Asp Pro  
   210                  215                  220

Ser Thr Gln Ala His Thr Arg Ala Leu Lys Ser Leu Ile Ser Phe Leu  
   225                  230                  235                  240

Ile Leu Tyr Ala Leu Ser Phe Leu Ser Leu Ile Ile Asp Ala Ala Lys  
                   245                  250                  255

Phe Ile Ser Met Gln Asn Asp Phe Tyr Trp Pro Trp Gln Ile Ala Val  
                   260                  265                  270

Tyr Leu Cys Ile Ser Val His Pro Phe Ile Leu Ile Phe Ser Asn Leu  
           275                  280                  285

Lys Leu Arg Ser Val Phe Ser Gln Leu Leu Leu Leu Ala Arg Gly Phe  
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Trp Val Ala  
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<211> 921  
 <212> DNA  
 <213> Homo sapiens

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 <212> PRT  
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 20 25 30  
 Ile Glu Ser Phe Lys Arg Gln Lys Ile Ser Phe Ala Asp Gln Ile Leu  
 35 40 45  
 Thr Ala Leu Ala Val Ser Arg Val Gly Leu Leu Trp Val Leu Leu Leu  
 50 55 60  
 Asn Trp Tyr Ser Thr Val Leu Asn Pro Ala Phe Asn Ser Val Glu Val  
 65 70 75 80

Arg Thr Thr Ala Tyr Asn Ile Trp Ala Val Ile Asn His Phe Ser Asn  
85 90 95

Trp Leu Ala Thr Thr Leu Ser Ile Phe Tyr Leu Leu Lys Ile Ala Asn  
100 105 110

Phe Ser Asn Phe Ile Phe Leu His Leu Lys Arg Arg Val Lys Ser Val  
115 120 125

Ile Leu Val Met Leu Leu Gly Pro Leu Leu Phe Leu Ala Cys His Leu  
130 135 140

Phe Val Ile Asn Met Asn Glu Ile Val Arg Thr Lys Glu Phe Glu Gly  
145 150 155 160

Asn Met Thr Trp Lys Ile Lys Leu Lys Ser Ala Met Tyr Phe Ser Asn  
165 170 175

Met Thr Val Thr Met Val Ala Asn Leu Val Pro Phe Thr Leu Thr Leu  
180 185 190

Leu Ser Phe Met Leu Leu Ile Cys Ser Leu Cys Lys His Leu Lys Lys  
195 200 205

Met Gln Leu Arg Gly Lys Gly Ser Gln Asp Pro Ser Thr Lys Val His  
210 215 220

Ile Lys Ala Leu Gln Thr Val Ile Ser Phe Leu Leu Leu Cys Ala Ile  
225 230 235 240

Tyr Phe Leu Ser Ile Met Ile Ser Val Trp Ser Phe Gly Ser Leu Glu  
245 250 255

Asn Lys Pro Val Phe Met Phe Cys Lys Ala Ile Arg Phe Ser Tyr Pro  
260 265 270

Ser Ile His Pro Phe Ile Leu Ile Trp Gly Asn Lys Lys Leu Lys Gln  
275 280 285

Thr Phe Leu Ser Val Phe Trp Gln Met Arg Tyr Trp Val Lys Gly Glu  
290 295 300

Lys Thr Ser Ser Pro  
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<210> 10

<211> 927  
 <212> DNA  
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 Ile Glu Arg Val Lys Arg Gln Lys Ile Ser Phe Ala Asp Gln Ile Leu  
 35 40 45  
 Thr Ala Leu Ala Val Ser Arg Val Gly Leu Leu Trp Val Leu Leu Leu  
 50 55 60  
 Asn Trp Tyr Ser Thr Val Phe Asn Pro Ala Phe Tyr Ser Val Glu Val  
 65 70 75 80

Arg Thr Thr Ala Tyr Asn Val Trp Ala Val Thr Gly His Phe Ser Asn  
85 90 95

Trp Leu Ala Thr Ser Leu Ser Ile Phe Tyr Leu Leu Lys Ile Ala Asn  
100 105 110

Phe Ser Asn Leu Ile Phe Leu His Leu Lys Arg Arg Val Lys Ser Val  
115 120 125

Ile Leu Val Met Leu Leu Gly Pro Leu Leu Phe Leu Ala Cys Gln Leu  
130 135 140

Phe Val Ile Asn Met Lys Glu Ile Val Arg Thr Lys Glu Tyr Glu Gly  
145 150 155 160

Asn Met Thr Trp Lys Ile Lys Leu Arg Ser Ala Val Tyr Leu Ser Asp  
165 170 175

Ala Thr Val Thr Thr Leu Gly Asn Leu Val Pro Phe Thr Leu Thr Leu  
180 185 190

Leu Cys Phe Leu Leu Leu Ile Cys Ser Leu Cys Lys His Leu Lys Lys  
195 200 205

Met Gln Leu His Gly Lys Gly Ser Gln Asp Pro Ser Thr Lys Val His  
210 215 220

Ile Lys Ala Leu Gln Thr Val Ile Phe Phe Leu Leu Leu Cys Ala Val  
225 230 235 240

Tyr Phe Leu Ser Ile Met Ile Ser Val Trp Ser Phe Gly Ser Leu Glu  
245 250 255

Asn Lys Pro Val Phe Met Phe Cys Lys Ala Ile Arg Phe Ser Tyr Pro  
260 265 270

Ser Ile His Pro Phe Ile Leu Ile Trp Gly Asn Lys Lys Leu Lys Gln  
275 280 285

Thr Phe Leu Ser Val Leu Arg Gln Val Arg Tyr Trp Val Lys Gly Glu  
290 295 300

Lys Pro Ser Ser Pro  
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 <212> DNA  
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<210> 13  
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 <212> PRT  
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<400> 13

Met Ile Thr Phe Leu Pro Ile Ile Phe Ser Ile Leu Val Val Val Thr  
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 Phe Val Ile Gly Asn Phe Ala Asn Gly Phe Ile Ala Leu Val Asn Ser  
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 Thr Glu Trp Val Lys Arg Gln Lys Ile Ser Phe Ala Asp Gln Ile Val  
 35 40 45  
 Thr Ala Leu Ala Val Ser Arg Val Gly Leu Leu Trp Val Leu Leu Leu  
 50 55 60  
 Asn Trp Tyr Ser Thr Val Leu Asn Pro Ala Phe Cys Ser Val Glu Leu  
 65 70 75 80

Arg Thr Thr Ala Tyr Asn Ile Trp Ala Val Thr Gly His Phe Ser Asn  
85 90 95

Trp Pro Ala Thr Ser Leu Ser Ile Phe Tyr Leu Leu Lys Ile Ala Asn  
100 105 110

Phe Ser Asn Leu Ile Phe Leu Arg Leu Lys Arg Arg Val Lys Ser Val  
115 120 125

Ile Leu Val Val Leu Leu Gly Pro Leu Leu Phe Leu Ala Cys His Leu  
130 135 140

Phe Val Val Asn Met Asn Gln Ile Val Trp Thr Lys Glu Tyr Glu Gly  
145 150 155 160

Asn Met Thr Trp Lys Ile Lys Leu Arg Arg Ala Met Tyr Leu Ser Asp  
165 170 175

Thr Thr Val Thr Met Leu Ala Asn Leu Val Pro Phe Thr Val Thr Leu  
180 185 190

Ile Ser Phe Leu Leu Leu Val Cys Ser Leu Cys Lys His Leu Lys Lys  
195 200 205

Met Gln Leu His Gly Lys Gly Ser Gln Asp Pro Ser Thr Lys Val His  
210 215 220

Ile Lys Val Leu Gln Thr Val Ile Ser Phe Phe Leu Leu Arg Ala Ile  
225 230 235 240

Tyr Phe Val Ser Val Ile Ile Ser Val Trp Ser Phe Lys Asn Leu Glu  
245 250 255

Asn Lys Pro Val Phe Met Phe Cys Gln Ala Ile Gly Phe Ser Cys Ser  
260 265 270

Ser Ala His Pro Phe Ile Leu Ile Trp Gly Asn Lys Lys Leu Lys Gln  
275 280 285

Thr Tyr Leu Ser Val Leu Trp Gln Met Arg Tyr  
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<211> 897  
<212> DNA  
<213> Homo sapiens

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&lt;210&gt; 15

&lt;211&gt; 299

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 15

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Met Ile Thr Phe Leu Pro Ile Ile Phe Ser Ile Leu Ile Val Val Thr
1           5           10           15

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Phe Val Ile Gly Asn Phe Ala Asn Gly Phe Ile Ala Leu Val Asn Ser
20           25           30

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Ile Glu Trp Phe Lys Arg Gln Lys Ile Ser Phe Ala Asp Gln Ile Leu
35           40           45

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Thr Ala Leu Ala Val Ser Arg Val Gly Leu Leu Trp Val Leu Val Leu
50           55           60

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Asn Trp Tyr Ala Thr Glu Leu Asn Pro Ala Phe Asn Ser Ile Glu Val
65           70           75           80

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Arg Ile Thr Ala Tyr Asn Val Trp Ala Val Ile Asn His Phe Ser Asn
85           90           95

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Trp Leu Ala Thr Ser Leu Ser Ile Phe Tyr Leu Leu Lys Ile Ala Asn  
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Phe Ser Asn Leu Ile Phe Leu His Leu Lys Arg Arg Val Lys Ser Val  
 115 120 125

Val Leu Val Ile Leu Leu Gly Pro Leu Leu Phe Leu Val Cys His Leu  
 130 135 140

Phe Val Ile Asn Met Asn Gln Ile Ile Trp Thr Lys Glu Tyr Glu Gly  
 145 150 155 160

Asn Met Thr Trp Lys Ile Lys Leu Arg Ser Ala Met Tyr Leu Ser Asn  
 165 170 175

Thr Thr Val Thr Ile Leu Ala Asn Leu Val Pro Phe Thr Leu Thr Leu  
 180 185 190

Ile Ser Phe Leu Leu Leu Ile Cys Ser Leu Cys Lys His Leu Lys Lys  
 195 200 205

Met Gln Leu His Gly Lys Gly Ser Gln Asp Pro Ser Met Lys Val His  
 210 215 220

Ile Lys Ala Leu Gln Thr Val Thr Ser Phe Leu Leu Leu Cys Ala Ile  
 225 230 235 240

Tyr Phe Leu Ser Ile Ile Met Ser Val Trp Ser Phe Glu Ser Leu Glu  
 245 250 255

Asn Lys Pro Val Phe Met Phe Cys Glu Ala Ile Ala Phe Ser Tyr Pro  
 260 265 270

Ser Thr His Pro Phe Ile Leu Ile Trp Gly Asn Lys Lys Leu Lys Gln  
 275 280 285

Thr Phe Leu Ser Val Leu Trp Gln Met Arg Tyr  
 290 295

<210> 16

<211> 897

<212> DNA

<213> Homo sapiens

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<210> 17  
 <211> 308  
 <212> PRT  
 <213> Homo sapiens

<400> 17

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Phe Val Ile Gly Asn Phe Ala Asn Gly Phe Ile Ala Leu Val Asn Ser  
 20 25 30

Ile Glu Trp Val Lys Arg Gln Lys Ile Ser Phe Val Asp Gln Ile Leu  
 35 40 45

Thr Ala Leu Ala Val Ser Arg Val Gly Leu Leu Trp Val Leu Leu Leu  
 50 55 60

His Trp Tyr Ala Thr Gln Leu Asn Pro Ala Phe Tyr Ser Val Glu Val  
 65 70 75 80

Arg Ile Thr Ala Tyr Asn Val Trp Ala Val Thr Asn His Phe Ser Ser  
 85 90 95

Trp Leu Ala Thr Ser Leu Ser Met Phe Tyr Leu Leu Arg Ile Ala Asn  
 100 105 110

Phe Ser Asn Leu Ile Phe Leu Arg Ile Lys Arg Arg Val Lys Ser Val  
 115 120 125

Val Leu Val Ile Leu Leu Gly Pro Leu Leu Phe Leu Val Cys His Leu  
130 135 140

Phe Val Ile Asn Met Asp Glu Thr Val Trp Thr Lys Glu Tyr Glu Gly  
145 150 155 160

Asn Val Thr Trp Lys Ile Lys Leu Arg Ser Ala Met Tyr His Ser Asn  
165 170 175

Met Thr Leu Thr Met Leu Ala Asn Phe Val Pro Leu Thr Leu Thr Leu  
180 185 190

Ile Ser Phe Leu Leu Leu Ile Cys Ser Leu Cys Lys His Leu Lys Lys  
195 200 205

Met Gln Leu His Gly Lys Gly Ser Gln Asp Pro Ser Thr Lys Val His  
210 215 220

Ile Lys Ala Leu Gln Thr Val Thr Ser Phe Leu Leu Leu Cys Ala Ile  
225 230 235 240

Tyr Phe Leu Ser Met Ile Ile Ser Val Cys Asn Phe Gly Arg Leu Glu  
245 250 255

Lys Gln Pro Val Phe Met Phe Cys Gln Ala Ile Ile Phe Ser Tyr Pro  
260 265 270

Ser Thr His Pro Phe Ile Leu Ile Leu Gly Asn Lys Lys Leu Lys Gln  
275 280 285

Ile Phe Leu Ser Val Leu Arg His Val Arg Tyr Trp Val Lys Asp Arg  
290 295 300

Ser Leu Arg Leu  
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<210> 18  
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<212> DNA  
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<210> 19  
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 <213> Homo sapiens

<400> 19

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Met Met Cys Phe Leu Leu Ile Ile Ser Ser Ile Leu Val Val Phe Ala
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Phe Val Leu Gly Asn Val Ala Asn Gly Phe Ile Ala Leu Val Asn Val
20               25               30

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Ile Asp Trp Val Asn Thr Arg Lys Ile Ser Ser Ala Glu Gln Ile Leu
35               40               45

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Thr Ala Leu Val Val Ser Arg Ile Gly Leu Leu Trp Val Met Leu Phe
50               55               60

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Leu Trp Tyr Ala Thr Val Phe Asn Ser Ala Leu Tyr Gly Leu Glu Val
65               70               75               80

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Arg Ile Val Ala Ser Asn Ala Trp Ala Val Thr Asn His Phe Ser Met
85               90               95

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Trp Leu Ala Ala Ser Leu Ser Ile Phe Cys Leu Leu Lys Ile Ala Asn
100            105            110

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Phe Ser Asn Leu Ile Ser Leu His Leu Lys Lys Arg Ile Lys Ser Val
115            120            125

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Val Leu Val Ile Leu Leu Gly Pro Leu Val Phe Leu Ile Cys Asn Leu  
130 135 140

Ala Val Ile Thr Met Asp Glu Arg Val Trp Thr Lys Glu Tyr Glu Gly  
145 150 155 160

Asn Val Thr Trp Lys Ile Lys Leu Arg Asn Ala Ile His Leu Ser Ser  
165 170 175

Leu Thr Val Thr Thr Leu Ala Asn Leu Ile Pro Phe Thr Leu Ser Leu  
180 185 190

Ile Cys Phe Leu Leu Leu Ile Cys Ser Leu Cys Lys His Leu Lys Lys  
195 200 205

Met Arg Leu His Ser Lys Gly Ser Gln Asp Pro Ser Thr Lys Val His  
210 215 220

Ile Lys Ala Leu Gln Thr Val Thr Ser Phe Leu Met Leu Phe Ala Ile  
225 230 235 240

Tyr Phe Leu Cys Ile Ile Thr Ser Thr Trp Asn Leu Arg Thr Gln Gln  
245 250 255

Ser Lys Leu Val Leu Leu Leu Cys Gln Thr Val Ala Ile Met Tyr Pro  
260 265 270

Ser Phe His Ser Phe Ile Leu Ile Met Gly Ser Arg Lys Leu Lys Gln  
275 280 285

Thr Phe Leu Ser Val Leu Trp Gln Met Thr  
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<210> 20  
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<210> 21  
 <211> 309  
 <212> PRT  
 <213> Homo sapiens

<400> 21

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Phe Ile Leu Gly Asn Phe Ala Asn Gly Phe Ile Ala Leu Ile Asn Phe  
 20 25 30

Ile Ala Trp Val Lys Arg Gln Lys Ile Ser Ser Ala Asp Gln Ile Ile  
 35 40 45

Ala Ala Leu Ala Val Ser Lys Val Gly Leu Leu Trp Val Ile Leu Leu  
 50 55 60

His Trp Tyr Ser Thr Val Leu Asn Pro Thr Ser Ser Asn Leu Lys Val  
 65 70 75 80

Ile Ile Phe Ile Ser Asn Ala Trp Ala Val Thr Asn His Phe Ser Ile  
 85 90 95

Trp Leu Ala Thr Ser Leu Ser Ile Phe Tyr Leu Leu Lys Ile Val Asn  
 100 105 110

Phe Ser Arg Leu Ile Phe His His Leu Lys Arg Lys Ala Lys Ser Val  
 115 120 125

Val Leu Val Ile Val Leu Gly Ser Leu Phe Phe Leu Val Cys His Leu  
 130 135 140

Val Met Lys His Thr Tyr Ile Asn Val Trp Thr Glu Glu Cys Glu Gly  
 145 150 155 160

Asn Val Thr Trp Lys Ile Lys Leu Arg Asn Ala Met His Leu Ser Asn  
 165 170 175

Leu Thr Val Ala Met Leu Ala Asn Leu Ile Pro Phe Thr Leu Thr Leu  
 180 185 190

Ile Ser Phe Leu Leu Leu Ile Tyr Ser Leu Cys Lys His Leu Lys Lys  
 195 200 205

Met Gln Leu His Gly Lys Gly Ser Gln Asp Pro Ser Thr Lys Ile His  
 210 215 220

Ile Lys Ala Leu Gln Thr Val Thr Ser Phe Leu Ile Leu Leu Ala Ile  
 225 230 235 240

Tyr Phe Leu Cys Leu Ile Ile Ser Phe Trp Asn Phe Lys Met Arg Pro  
 245 250 255

Lys Glu Ile Val Leu Met Leu Cys Gln Ala Phe Gly Ile Ile Tyr Pro  
 260 265 270

Ser Phe His Ser Phe Ile Leu Ile Trp Gly Asn Lys Thr Leu Lys Gln  
 275 280 285

Thr Phe Leu Ser Val Leu Trp Gln Val Thr Cys Trp Ala Lys Gly Gln  
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Asn Gln Ser Thr Pro  
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<210> 22  
 <211> 927  
 <212> DNA  
 <213> Homo sapiens

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<210> 23  
 <211> 299  
 <212> PRT  
 <213> Homo sapiens

<400> 23

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Phe Val Leu Gly Asn Phe Ala Asn Gly Phe Ile Ala Leu Val Asn Phe  
 20 25 30

Ile Asp Trp Val Lys Arg Lys Lys Ile Ser Ser Ala Asp Gln Ile Leu  
 35 40 45

Thr Ala Leu Ala Val Ser Arg Ile Gly Leu Leu Trp Ala Leu Leu Leu  
 50 55 60

Asn Trp Tyr Leu Thr Val Leu Asn Pro Ala Phe Tyr Ser Val Glu Leu  
 65 70 75 80

Arg Ile Thr Ser Tyr Asn Ala Trp Val Val Thr Asn His Phe Ser Met  
 85 90 95

Trp Leu Ala Ala Asn Leu Ser Ile Phe Tyr Leu Leu Lys Ile Ala Asn  
 100 105 110

Phe Ser Asn Leu Leu Phe Leu His Leu Lys Arg Arg Val Arg Ser Val  
 115 120 125

Ile Leu Val Ile Leu Leu Gly Thr Leu Ile Phe Leu Val Cys His Leu  
 130 135 140

Leu Val Ala Asn Met Asp Glu Ser Met Trp Ala Glu Glu Tyr Glu Gly  
 145 150 155 160

Asn Met Thr Gly Lys Met Lys Leu Arg Asn Thr Val His Leu Ser Tyr  
 165 170 175

Leu Thr Val Thr Thr Leu Trp Ser Phe Ile Pro Phe Thr Leu Ser Leu  
 180 185 190

Ile Ser Phe Leu Met Leu Ile Cys Ser Leu Tyr Lys His Leu Lys Lys  
 195 200 205

Met Gln Leu His Gly Glu Gly Ser Gln Asp Leu Ser Thr Lys Val His  
 210 215 220

Ile Lys Ala Leu Gln Thr Leu Ile Ser Phe Leu Leu Leu Cys Ala Ile  
 225 230 235 240

Phe Phe Leu Phe Leu Ile Val Ser Val Trp Ser Pro Arg Arg Leu Arg  
 245 250 255

Asn Asp Pro Val Val Met Val Ser Lys Ala Val Gly Asn Ile Tyr Leu  
 260 265 270

Ala Phe Asp Ser Phe Ile Leu Ile Trp Arg Thr Lys Lys Leu Lys His  
 275 280 285

Thr Phe Leu Leu Ile Leu Cys Gln Ile Arg Cys  
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<210> 24  
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<210> 25  
 <211> 299  
 <212> PRT  
 <213> Homo sapiens

<400> 25

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Phe Leu Leu Gly Ile Phe Thr Asn Gly Ile Ile Val Val Val Asn Gly  
 20 25 30

Ile Asp Leu Ile Lys His Arg Lys Met Ala Pro Leu Asp Leu Leu Leu  
 35 40 45

Ser Cys Leu Ala Val Ser Arg Ile Phe Leu Gln Leu Phe Ile Phe Tyr  
 50 55 60

Val Asn Val Ile Val Ile Phe Phe Ile Glu Phe Ile Met Cys Ser Ala  
 65 70 75 80

Asn Cys Ala Ile Leu Leu Phe Ile Asn Glu Leu Glu Leu Trp Leu Ala  
 85 90 95

Thr Trp Leu Gly Val Phe Tyr Cys Ala Lys Val Ala Ser Val Arg His  
 100 105 110

Pro Leu Phe Ile Trp Leu Lys Met Arg Ile Ser Lys Leu Val Pro Trp  
 115 120 125

Met Ile Leu Gly Ser Leu Leu Tyr Val Ser Met Ile Cys Val Phe His  
 130 135 140

Ser Lys Tyr Ala Gly Phe Met Val Pro Tyr Phe Leu Arg Lys Phe Phe  
 145 150 155 160

Ser Gln Asn Ala Thr Ile Gln Lys Glu Asp Thr Leu Ala Ile Gln Ile  
 165 170 175

Phe Ser Phe Val Ala Glu Phe Ser Val Pro Leu Leu Ile Phe Leu Phe  
 180 185 190

Ala Val Leu Leu Leu Ile Phe Ser Leu Gly Arg His Thr Arg Gln Met  
 195 200 205

Arg Asn Thr Val Ala Gly Ser Arg Val Pro Gly Arg Gly Ala Pro Ile  
 210 215 220

Ser Ala Leu Leu Ser Ile Leu Ser Phe Leu Ile Leu Tyr Phe Ser His  
 225 230 235 240

Cys Met Ile Lys Val Phe Leu Ser Ser Leu Lys Phe His Ile Arg Arg  
 245 250 255

Phe Ile Phe Leu Phe Phe Ile Leu Val Ile Gly Ile Tyr Pro Ser Gly  
 260 265 270

His Ser Leu Ile Leu Ile Leu Gly Asn Pro Lys Leu Lys Gln Asn Ala  
 275 280 285

Lys Lys Phe Leu Leu His Ser Lys Cys Cys Gln  
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<210> 26  
 <211> 897  
 <212> DNA  
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 atggctccgc tggatctcct tctttcttgt ctggcagttt ctagaatttt tctgcagttg 180  
 ttcattcttct acgttaatgt gattgttata ttcttcatag aattcatcat gtgttctgcg 240  
 aattgtgcaa ttctcttatt tataaatgaa ttggaacttt ggcttgccac atggctcggc 300  
 gttttctatt gtgccaaggt tgccagcgtc cgtcacccac tcttcatctg gttgaagatg 360  
 aggatatcca agctgggtccc atggatgata ctgggggtctc tgctatatgt atctatgatt 420  
 tgtgttttcc atagcaaata tgcagggttt atggteccat acttcctaag gaaatttttc 480  
 tcccaaaatg ccacaattca aaaagaagat aactgggcta tacagatttt ctcttttgtt 540  
 gctgagttct cagtgccatt gcttatcttc ctttttgctg ttttgctctt gattttctct 600  
 ctggggaggc acaccgggca aatgagaaac acagtggccg gcagcagggt tcctggcagg 660  
 ggtgcaccca tcagcgcggt gctgtctata ctgtccttcc tgatcctcta cttctccac 720

tgcattgataa aagtttttct ctctttctcta aagtttcaca tcagaagggtt catctttctg 780  
 ttcttcatcc ttgtgattgg tatataccct tctggacact ctctcatctt aatttttagga 840  
 aatcctaaat tgaaacaaaa tgcaaaaaag ttcctcctcc acagtaagtg ctgtcag 897

<210> 27  
 <211> 299  
 <212> PRT  
 <213> Homo sapiens

<400> 27

Met Leu Arg Leu Phe Tyr Phe Ser Ala Ile Ile Ala Ser Val Ile Leu  
1 5 10 15

Asn Phe Val Gly Ile Ile Met Asn Leu Phe Ile Thr Val Val Asn Cys  
20 25 30

Lys Thr Trp Val Lys Ser His Arg Ile Ser Ser Ser Asp Arg Ile Leu  
35 40 45

Phe Ser Leu Gly Ile Thr Arg Phe Leu Met Leu Gly Leu Phe Leu Val  
50 55 60

Asn Thr Ile Tyr Phe Val Ser Ser Asn Thr Glu Arg Ser Val Tyr Leu  
65 70 75 80

Ser Ala Phe Phe Val Leu Cys Phe Met Phe Leu Asp Ser Ser Ser Val  
85 90 95

Trp Phe Val Thr Leu Leu Asn Ile Leu Tyr Cys Val Lys Ile Thr Asn  
100 105 110

Phe Gln His Ser Val Phe Leu Leu Leu Lys Arg Asn Ile Ser Pro Lys  
115 120 125

Ile Pro Arg Leu Leu Leu Ala Cys Val Leu Ile Ser Ala Phe Thr Thr  
130 135 140

Cys Leu Tyr Ile Thr Leu Ser Gln Ala Ser Pro Phe Pro Glu Leu Val  
145 150 155 160

Thr Thr Arg Asn Asn Thr Ser Phe Asn Ile Ser Glu Gly Ile Leu Ser  
165 170 175

Leu Val Val Ser Leu Val Leu Ser Ser Ser Leu Gln Phe Ile Ile Asn  
180 185 190

Val Thr Ser Ala Ser Leu Leu Ile His Ser Leu Arg Arg His Ile Gln  
195 200 205

Lys Met Gln Lys Asn Ala Thr Gly Phe Trp Asn Pro Gln Thr Glu Ala  
210 215 220

His Val Gly Ala Met Lys Leu Met Val Tyr Phe Leu Ile Leu Tyr Ile  
225 230 235 240

Pro Tyr Ser Val Ala Thr Leu Val Gln Tyr Leu Pro Phe Tyr Ala Gly  
245 250 255

Met Asp Met Gly Thr Lys Ser Ile Cys Leu Ile Phe Ala Thr Leu Tyr  
260 265 270

Ser Pro Gly His Ser Val Leu Ile Ile Ile Thr His Pro Lys Leu Lys  
275 280 285

Thr Thr Ala Lys Lys Ile Leu Cys Phe Lys Lys  
290 295

<210> 28  
<211> 897  
<212> DNA  
<213> Homo sapiens

<400> 28  
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atcattatga atctgtttat tacagtgggc aattgcaaaa cttgggtcaa aagccataga 120  
atctcctctt ctgataggat tctgttcagc ctgggcatca ccagggttct tatgctggga 180  
ctatttctgg tgaacaccat ctacttcgct tcttcaaata cggaaaggct agtctacctg 240  
tctgcttttt ttgtgttggt tttcatgttt ttggactcga gcagtgtctg gtttgtgacc 300  
ttgctcaata tcttgactg tgtgaagatt actaacttcc aacactcagt gtttctcctg 360  
ctgaagcgga atatctcccc aaagatcccc aggctgctgc tggcctgtgt gctgatttct 420  
gctttcacca cttgcctgta catcacgctt agccaggcat caccttttcc tgaacttggtg 480  
actacgagaa ataacacatc atttaatatc agtgagggca tcttgtcttt agtggtttct 540  
ttggtcttga gctcatctct ccagttcatc attaatgtga cttctgcttc cttgctaata 600  
cactccttga ggagacatat acagaagatg cagaaaaatg ccactgggtt ctggaatccc 660  
cagacggaag ctcatgtagg tgctatgaag ctgatgggtc atttctcat cctctacatt 720  
ccatattcag ttgctacct ggtccagtat ctcccccttt atgcagggat ggatatgggg 780  
accaaatacca tttgtctgat ttttgccacc ctttactctc caggacattc tgttctcatt 840  
attatcacac atcctaaact gaaaacaaca gcaaagaaga ttctttgttt caaaaaa 897

&lt;210&gt; 29

&lt;211&gt; 299

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 29

Met Leu Ser Ala Gly Leu Gly Leu Leu Met Leu Val Ala Val Val Glu  
 1 5 10 15

Phe Leu Ile Gly Leu Ile Gly Asn Gly Ser Leu Val Val Trp Ser Phe  
 20 25 30

Arg Glu Trp Ile Arg Lys Phe Asn Trp Ser Ser Tyr Asn Leu Ile Ile  
 35 40 45

Leu Gly Leu Ala Gly Cys Arg Phe Leu Leu Gln Trp Leu Ile Ile Leu  
 50 55 60

Asp Leu Ser Leu Phe Pro Leu Phe Gln Ser Ser Arg Trp Leu Arg Tyr  
 65 70 75 80

Leu Ser Ile Phe Trp Val Leu Val Ser Gln Ala Ser Leu Trp Phe Ala  
 85 90 95

Thr Phe Leu Ser Val Phe Tyr Cys Lys Lys Ile Thr Thr Phe Asp Arg  
 100 105 110

Pro Ala Tyr Leu Trp Leu Lys Gln Arg Ala Tyr Asn Leu Ser Leu Trp  
 115 120 125

Cys Leu Leu Gly Tyr Phe Ile Ile Asn Leu Leu Leu Thr Val Gln Ile  
 130 135 140

Gly Leu Thr Phe Tyr His Pro Pro Gln Gly Asn Ser Ser Ile Arg Tyr  
 145 150 155 160

Pro Phe Glu Ser Trp Gln Tyr Leu Tyr Ala Phe Gln Leu Asn Ser Gly  
 165 170 175

Ser Tyr Leu Pro Leu Val Val Phe Leu Val Ser Ser Gly Met Leu Ile  
 180 185 190

Val Ser Leu Tyr Thr His His Lys Lys Met Lys Val His Ser Ala Gly  
 195 200 205

Arg Arg Asp Val Arg Ala Lys Ala His Ile Thr Ala Leu Lys Ser Leu  
 210 215 220

Gly Cys Phe Leu Leu Leu His Leu Val Tyr Ile Met Ala Ser Pro Phe  
225 230 235 240

Ser Ile Thr Ser Lys Thr Tyr Pro Pro Asp Leu Thr Ser Val Phe Ile  
245 250 255

Trp Glu Thr Leu Met Ala Ala Tyr Pro Ser Leu His Ser Leu Ile Leu  
260 265 270

Ile Met Gly Ile Pro Arg Val Lys Gln Thr Cys Gln Lys Ile Leu Trp  
275 280 285

Lys Thr Val Cys Ala Arg Arg Cys Trp Gly Pro  
290 295

<210> 30  
<211> 897  
<212> DNA  
<213> Homo sapiens

<400> 30  
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ttaattggaa atggaagcct ggtggtctgg agtttttagag aatggatcag aaaattcaac 120  
tggtcctcat ataacctcat taccctgggc ctggctggct gccgatttct cctgcagtgg 180  
ctgatcattt tggacttaag cttgtttcca cttttccaga gcagccgttg gcttcgctat 240  
cttagtatct tctgggtcct ggtaagccag gccagcttat ggtttgccac cttcctcagt 300  
gtcttctatt gcaagaagat caccgacctc gatcgcccg cctacttgtg gctgaagcag 360  
agggcctata acctgagtct ctgggtgcct ctgggctact ttataatcaa ttgttactt 420  
acagtccaaa ttggcttaac attctatcat cctccccaag gaaacagcag cattcggtat 480  
ccctttgaaa gctggcagta cctgtatgca tttcagctca attcaggaag ttatttgctt 540  
ttagtggtgt ttcttggttc ctctgggatg ctgattgtct ctttgatatac acaccacaag 600  
aagatgaagg tccattcagc tggtaggagg gatgtccggg ccaaggctca catcactgag 660  
ctgaagtctt tgggctgctt cctcttactt cacctggttt atatcatggc cagcccttc 720  
tccatcacct ccaagactta tctcctgat ctcaccagt tcttcacttg ggagacactc 780  
atggcagcct atccttctct tcattctctc atattgatca tggggattcc tagggatgaag 840  
cagacttgctc agaagatcct gtggaagacg gtgtgtgctc ggagatgctg gggccca 897

<210> 31  
<211> 318  
<212> PRT  
<213> Homo sapiens

&lt;400&gt; 31

Met Ala Asp Lys Val Gln Thr Thr Leu Leu Phe Leu Ala Val Gly Glu  
 1 5 10 15

Phe Ser Val Gly Ile Leu Gly Asn Ala Phe Ile Gly Leu Val Asn Cys  
 20 25 30

Met Asp Trp Val Lys Lys Arg Lys Ile Ala Ser Ile Asp Leu Ile Leu  
 35 40 45

Thr Ser Leu Ala Ile Ser Arg Ile Cys Leu Leu Cys Val Ile Leu Leu  
 50 55 60

Asp Cys Phe Ile Leu Val Leu Tyr Pro Asp Val Tyr Ala Thr Gly Lys  
 65 70 75 80

Glu Met Arg Ile Ile Asp Phe Phe Trp Thr Leu Thr Asn His Leu Ser  
 85 90 95

Ile Trp Phe Ala Thr Cys Leu Ser Ile Tyr Tyr Phe Phe Lys Ile Gly  
 100 105 110

Asn Phe Phe His Pro Leu Phe Leu Trp Met Lys Trp Arg Ile Asp Arg  
 115 120 125

Val Ile Ser Trp Ile Leu Leu Gly Cys Val Val Leu Ser Val Phe Ile  
 130 135 140

Ser Leu Pro Ala Thr Glu Asn Leu Asn Ala Asp Phe Arg Phe Cys Val  
 145 150 155 160

Lys Ala Lys Arg Lys Thr Asn Leu Thr Trp Ser Cys Arg Val Asn Lys  
 165 170 175

Thr Gln His Ala Ser Thr Lys Leu Phe Leu Asn Leu Ala Thr Leu Leu  
 180 185 190

Pro Phe Cys Val Cys Leu Met Ser Phe Phe Leu Leu Ile Leu Ser Leu  
 195 200 205

Arg Arg His Ile Arg Arg Met Gln Leu Ser Ala Thr Gly Cys Arg Asp  
 210 215 220

Pro Ser Thr Glu Ala His Val Arg Ala Leu Lys Ala Val Ile Ser Phe  
 225 230 235 240

Leu Leu Leu Phe Ile Ala Tyr Tyr Leu Ser Phe Leu Ile Ala Thr Ser  
                   245                                  250                                  255

Ser Tyr Phe Met Pro Glu Thr Glu Leu Ala Val Ile Phe Gly Glu Ser  
                   260                                  265                                  270

Ile Ala Leu Ile Tyr Pro Ser Ser His Ser Phe Ile Leu Ile Leu Gly  
                   275                                  280                                  285

Asn Asn Lys Leu Arg His Ala Ser Leu Lys Val Ile Trp Lys Val Met  
                   290                                  295                                  300

Ser Ile Leu Lys Gly Arg Lys Phe Gln Gln His Lys Gln Ile  
   305                                  310                                  315

<210> 32  
 <211> 954  
 <212> DNA  
 <213> Homo sapiens

<400> 32  
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 atcttaggga atgcattcat tggattggta aactgcatgg actgggtcaa gaagaggaaa 120  
 attgcctcca ttgatttaat cctcacaagt ctggccatat ccagaatttg tctattgtgc 180  
 gtaatactat tagattgttt tatattggtg ctatatccag atgtctatgc cactggtaaa 240  
 gaaatgagaa tcattgactt cttctggaca ctaaccaatc atttaagtat ctggtttgca 300  
 acctgectca gcatttacta tttcttcaag ataggtaatt tctttcaccc acttttcttc 360  
 tggatgaagt ggagaattga caggggtgatt tcctggattc tactgggggtg cgtgggttctc 420  
 tctgtgttta ttagccttcc agccactgag aatttgaacg ctgatttcag gttttgtgtg 480  
 aaggcaaaga ggaaaacaaa cttaacttgg agttgcagag taaataaaaac tcaacatgct 540  
 tctaccaagt tattttctcaa cctggcaacg ctgctcccct tttgtgtgtg cctaattgtcc 600  
 tttttctctt tgatcctctc cctgcggaga catatcaggc gaatgcagct cagtgccaca 660  
 ggggtgcagag accccagcac agaagcccat gtgagagccc tgaaagctgt catttccttc 720  
 cttctctctt ttattgcta ctatttgtcc tttctcattg ccacctccag ctactttatg 780  
 ccagagacgg aattagctgt gatttttggg gagtccatag ctctaatacta cccctcaagt 840  
 cattcattta tcctaatact ggggaacaat aaattaagac atgcatctct aaaggtgatt 900  
 tggaaagtaa tgtctattct aaaaggaaga aaattccaac aacataaaca aatc 954

<210> 33  
 <211> 309  
 <212> PRT  
 <213> Homo sapiens



&lt;400&gt; 33

Met Phe Ser Pro Ala Asp Asn Ile Phe Ile Ile Leu Ile Thr Gly Glu  
 1 5 10 15

Phe Ile Leu Gly Ile Leu Gly Asn Gly Tyr Ile Ala Leu Val Asn Trp  
 20 25 30

Ile Asp Trp Ile Lys Lys Lys Lys Ile Ser Thr Val Asp Tyr Ile Leu  
 35 40 45

Thr Asn Leu Val Ile Ala Arg Ile Cys Leu Ile Ser Val Met Val Val  
 50 55 60

Asn Gly Ile Val Ile Val Leu Asn Pro Asp Val Tyr Thr Lys Asn Lys  
 65 70 75 80

Gln Gln Ile Val Ile Phe Thr Phe Trp Thr Phe Ala Asn Tyr Leu Asn  
 85 90 95

Met Trp Ile Thr Thr Cys Leu Asn Val Phe Tyr Phe Leu Lys Ile Ala  
 100 105 110

Ser Ser Ser His Pro Leu Phe Leu Trp Leu Lys Trp Lys Ile Asp Met  
 115 120 125

Val Val His Trp Ile Leu Leu Gly Cys Phe Ala Ile Ser Leu Leu Val  
 130 135 140

Ser Leu Ile Ala Ala Ile Val Leu Ser Cys Asp Tyr Arg Phe His Ala  
 145 150 155 160

Ile Ala Lys His Lys Arg Asn Ile Thr Glu Met Phe His Val Ser Lys  
 165 170 175

Ile Pro Tyr Phe Glu Pro Leu Thr Leu Phe Asn Leu Phe Ala Ile Val  
 180 185 190

Pro Phe Ile Val Ser Leu Ile Ser Phe Phe Leu Leu Val Arg Ser Leu  
 195 200 205

Trp Arg His Thr Lys Gln Ile Lys Leu Tyr Ala Thr Gly Ser Arg Asp  
 210 215 220

Pro Ser Thr Glu Val His Val Arg Ala Ile Lys Thr Met Thr Ser Phe  
 225 230 235 240

Ile Phe Phe Phe Phe Leu Tyr Tyr Ile Ser Ser Ile Leu Met Thr Phe  
 245 250 255

Ser Tyr Leu Met Thr Lys Tyr Lys Leu Ala Val Glu Phe Gly Glu Ile  
 260 265 270

Ala Ala Ile Leu Tyr Pro Leu Gly His Ser Leu Ile Leu Ile Val Leu  
 275 280 285

Asn Asn Lys Leu Arg Gln Thr Phe Val Arg Met Leu Thr Cys Arg Lys  
 290 295 300

Ile Ala Cys Met Ile  
 305

<210> 34  
 <211> 927  
 <212> DNA  
 <213> Homo sapiens

<400> 34  
 atgttcagtc ctgcagataa catctttata atcctaataa ctggagaatt catactagga 60  
 atattgggga atggatacat tgcactagtc aactggattg actggattaa gaagaaaaag 120  
 atttccacag ttgactacat ccttaccaat ttagttatcg ccagaatttg tttgatcagt 180  
 gtaatggttg taaatggcat tgtaatagta ctgaaccag atgtttatac aaaaaataaa 240  
 caacagatag tcattttttac cttctggaca tttgccaact acttaaatat gtggattacc 300  
 acctgcctta atgtcttcta tttctgaag atagccagtt cctctcatcc actttttctc 360  
 tggctgaagt ggaaaattga tatggtggtg cactggatcc tgctgggatg ctttgccatt 420  
 tccttggttg tcagccttat agcagcaata gtactgagtt gtgattatag gtttcatgca 480  
 attgccaaac ataaaagaaa cattactgaa atgttccatg tgagtaaaat accatacttt 540  
 gaacccttaa ctctctttaa cctgtttgca attgtcccat ttattgtgtc actgatatca 600  
 tttttccttt tagtaagatc tttatggaga cataccaagc aaataaaact ctatgctacc 660  
 ggcagtagag accccagcac agaagttcat gtgagagcca ttaaaactat gacttcattt 720  
 atcttctttt ttttctata ctatatttct tctattttga tgacctttag ctatcttatg 780  
 acaaaataca agttagctgt ggagtttgga gagattgcag caattctcta ccccttggtg 840  
 cactcactta ttttaattgt tttaaataat aaactgaggc agacatttgt cagaatgctg 900  
 acatgtagaa aaattgcctg catgata 927

<210> 35  
 <211> 312  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 35

Met Pro Ser Ala Ile Glu Ala Ile Tyr Ile Ile Leu Ile Ala Gly Glu  
 1 5 10 15

Leu Thr Ile Gly Ile Trp Gly Asn Gly Phe Ile Val Leu Val Asn Cys  
 20 25 30

Ile Asp Trp Leu Lys Arg Arg Asp Ile Ser Leu Ile Asp Ile Ile Leu  
 35 40 45

Ile Ser Leu Ala Ile Ser Arg Ile Cys Leu Leu Cys Val Ile Ser Leu  
 50 55 60

Asp Gly Phe Phe Met Leu Leu Phe Pro Gly Thr Tyr Gly Asn Ser Val  
 65 70 75 80

Leu Val Ser Ile Val Asn Val Val Trp Thr Phe Ala Asn Asn Ser Ser  
 85 90 95

Leu Trp Phe Thr Ser Cys Leu Ser Ile Phe Tyr Leu Leu Lys Ile Ala  
 100 105 110

Asn Ile Ser His Pro Phe Phe Phe Trp Leu Lys Leu Lys Ile Asn Lys  
 115 120 125

Val Met Leu Ala Ile Leu Leu Gly Ser Phe Leu Ile Ser Leu Ile Ile  
 130 135 140

Ser Val Pro Lys Asn Asp Asp Met Trp Tyr His Leu Phe Lys Val Ser  
 145 150 155 160

His Glu Glu Asn Ile Thr Trp Lys Phe Lys Val Ser Lys Ile Pro Gly  
 165 170 175

Thr Phe Lys Gln Leu Thr Leu Asn Leu Gly Val Met Val Pro Phe Ile  
 180 185 190

Leu Cys Leu Ile Ser Phe Phe Leu Leu Leu Phe Ser Leu Val Arg His  
 195 200 205

Thr Lys Gln Ile Arg Leu His Ala Thr Gly Phe Arg Asp Pro Ser Thr  
 210 215 220

Glu Ala His Met Arg Ala Ile Lys Ala Val Ile Ile Phe Leu Leu Leu  
 225 230 235 240

Leu Ile Val Tyr Tyr Pro Val Phe Leu Val Met Thr Ser Ser Ala Leu  
 245 250 255

Ile Pro Gln Gly Lys Leu Val Leu Met Ile Gly Asp Ile Val Thr Val  
 260 265 270

Ile Phe Pro Ser Ser His Ser Phe Ile Leu Ile Met Gly Asn Ser Lys  
 275 280 285

Leu Arg Glu Ala Phe Leu Lys Met Leu Arg Phe Val Lys Cys Phe Leu  
 290 295 300

Arg Arg Arg Lys Pro Phe Val Pro  
 305 310

<210> 36  
 <211> 936  
 <212> DNA  
 <213> Homo sapiens

<400> 36  
 atgccaagtg caatagaggc aatatatatt attttaattg ctggtgaatt gaccataggg 60  
 atttggggaa atggattcat tgtactagtt aactgcattg actggctcaa aagaagagat 120  
 atttccttga ttgacatcat cctgatcagc ttggccatct ccagaatctg tctgctgtgt 180  
 gtaatatcat tagatggctt ctttatgctg ctctttccag gtacatatgg caatagcgtg 240  
 ctagtaagca ttgtgaatgt tgtctggaca tttgccaata attcaagtct ctggtttact 300  
 tcttgccctca gtatcttcta tttactcaag atagccaata tatgcacccc atttttcttc 360  
 tggctgaagc taaagatcaa caaggatcat cttgcgattc ttctgggggc ctttcttctc 420  
 tctttaatta ttagtggtcc aaagaatgat gatatgtggg atcacctttt caaagtcagt 480  
 catgaagaaa acattacttg gaaattcaaa gtgagtaaaa ttccaggtac tttcaaacag 540  
 ttaaccctga acctgggggt gatgggtccc tttatccttt gcctgatctc atttttcttg 600  
 ttacttttct ccctagttag acacaccaag cagattcgac tgcattgctac agggttcaga 660  
 gaccccagta cagaggccca catgagggcc ataaaggcag tgatcatctt tctgctctc 720  
 ctcatcgtgt actaccagc ctttcttggt atgacctcta gcgctctgat tctcaggga 780  
 aaattagtgt tgatgattgg tgacatagta actgtcattt tcccatcaag ccattcattc 840  
 attctaatta tgggaaatag caagttgagg gaagcttttc tgaagatgtt aagatttggtg 900  
 aagtgtttcc ttagaagaag aaagcctttt gttcca 936

<210> 37  
 <211> 307  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 37

Met Leu Arg Val Val Glu Gly Ile Phe Ile Phe Val Val Val Ser Glu  
1 5 10 15

Ser Val Phe Gly Val Leu Gly Asn Gly Phe Ile Gly Leu Val Asn Cys  
20 25 30

Ile Asp Cys Ala Lys Asn Lys Leu Ser Thr Ile Gly Phe Ile Leu Thr  
35 40 45

Gly Leu Ala Ile Ser Arg Ile Phe Leu Ile Trp Ile Ile Ile Thr Asp  
50 55 60

Gly Phe Ile Gln Ile Phe Ser Pro Asn Ile Tyr Ala Ser Gly Asn Leu  
65 70 75 80

Ile Glu Tyr Ile Ser Tyr Phe Trp Val Ile Gly Asn Gln Ser Ser Met  
85 90 95

Trp Phe Ala Thr Ser Leu Ser Ile Phe Tyr Phe Leu Lys Ile Ala Asn  
100 105 110

Phe Ser Asn Tyr Ile Phe Leu Trp Leu Lys Ser Arg Thr Asn Met Val  
115 120 125

Leu Pro Phe Met Ile Val Phe Leu Leu Ile Ser Ser Leu Leu Asn Phe  
130 135 140

Ala Tyr Ile Ala Lys Ile Leu Asn Asp Tyr Lys Met Lys Asn Asp Thr  
145 150 155 160

Val Trp Asp Leu Asn Met Tyr Lys Ser Glu Tyr Phe Ile Lys Gln Ile  
165 170 175

Leu Leu Asn Leu Gly Val Ile Phe Phe Phe Thr Leu Ser Leu Ile Thr  
180 185 190

Cys Ile Phe Leu Ile Ile Ser Leu Trp Arg His Asn Arg Gln Met Gln  
195 200 205

Ser Asn Val Thr Gly Leu Arg Asp Ser Asn Thr Glu Ala His Val Lys  
210 215 220

Ala Met Lys Val Leu Ile Ser Phe Ile Ile Leu Phe Ile Leu Tyr Phe  
225 230 235 240

Ile Gly Met Ala Ile Glu Ile Ser Cys Phe Thr Val Arg Glu Asn Lys  
 245 250 255

Leu Leu Leu Met Phe Gly Met Thr Thr Thr Ala Ile Tyr Pro Trp Gly  
 260 265 270

His Ser Phe Ile Leu Ile Leu Gly Asn Ser Lys Leu Lys Gln Ala Ser  
 275 280 285

Leu Arg Val Leu Gln Gln Leu Lys Cys Cys Glu Lys Arg Lys Asn Leu  
 290 295 300

Arg Val Thr  
 305

<210> 38  
 <211> 921  
 <212> DNA  
 <213> Homo sapiens

<400> 38  
 atgctacgtg tagtggaagg catcttcatt tttgttgtag ttagtgagtc agtggttggg 60  
 gttttgggga atggatttat tggacttgta aactgcattg actgtgccaa gaataagtta 120  
 tctacgattg gctttattct caccggctta gctatttcaa gaatttttct gatatggata 180  
 ataattacag atggatttat acagatatc tctccaaata tatatgcctc cggtaaccta 240  
 attgaatata ttagttactt ttgggtaatt ggtaatcaat caagtatgtg gtttgccacc 300  
 agcctcagca tcttctatct cctgaagata gcaaattttt ccaactacat atttctctgg 360  
 ttgaagagca gaacaaatat gggtcttccc ttcatgatag tattcttact tatttcatcg 420  
 ttacttaatt ttgcatacat tgcgaagatt cttaatgatt ataaaatgaa gaatgacaca 480  
 gtctggggtc tcaacatgta taaaagtga tactttatta aacagatttt gctaaatctg 540  
 ggagtcattt tcttctttac actatcccta attacatgta tttttttaat catttccctt 600  
 tggagacaca acaggcagat gcaatcgaat gtgacaggat tgagagactc caacacagaa 660  
 gctcatgtga aggcaatgaa agttttgata tctttcatca tcctctttat cttgtatttt 720  
 ataggcatgg ccatagaaat atcatgtttt actgtgagag aaaacaaact gctgcttatg 780  
 tttggaatga caaccacagc catctatccc tgggggtcact catttatctt aattctagga 840  
 aacagcaagc taaagcaagc ctctttgagg gtactgcagc aattgaagtg ctgtgagaaa 900  
 aggaaaaatc tcagagtcac a 921

<210> 39  
 <211> 303  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 39

Met Glu Ser Ala Leu Pro Ser Ile Phe Thr Leu Val Ile Ile Ala Glu  
 1 5 10 15

Phe Ile Ile Gly Asn Leu Ser Asn Gly Phe Ile Val Leu Ile Asn Cys  
 20 25 30

Ile Asp Trp Val Ser Lys Arg Glu Leu Ser Ser Val Asp Lys Leu Leu  
 35 40 45

Ile Ile Leu Ala Ile Ser Arg Ile Gly Leu Ile Trp Glu Ile Leu Val  
 50 55 60

Ser Trp Phe Leu Ala Leu His Tyr Leu Ala Ile Phe Val Ser Gly Thr  
 65 70 75 80

Gly Leu Arg Ile Met Ile Phe Ser Trp Ile Val Ser Asn His Phe Asn  
 85 90 95

Leu Trp Leu Ala Thr Ile Phe Ser Ile Phe Tyr Leu Leu Lys Ile Ala  
 100 105 110

Ser Phe Ser Ser Pro Ala Phe Leu Tyr Leu Lys Trp Arg Val Asn Lys  
 115 120 125

Val Ile Leu Met Ile Leu Leu Gly Thr Leu Val Phe Leu Phe Leu Asn  
 130 135 140

Leu Ile Gln Ile Asn Met His Ile Lys Asp Trp Leu Asp Arg Tyr Glu  
 145 150 155 160

Arg Asn Thr Thr Trp Asn Phe Ser Met Ser Asp Phe Glu Thr Phe Ser  
 165 170 175

Val Ser Val Lys Phe Thr Met Thr Met Phe Ser Leu Thr Pro Phe Thr  
 180 185 190

Val Ala Phe Ile Ser Phe Leu Leu Leu Ile Phe Ser Leu Gln Lys His  
 195 200 205

Leu Gln Lys Met Gln Leu Asn Tyr Lys Gly His Arg Asp Pro Arg Thr  
 210 215 220

Lys Val His Thr Asn Ala Leu Lys Ile Val Ile Ser Phe Leu Leu Phe  
 225 230 235 240

Tyr Ala Ser Phe Phe Leu Cys Val Leu Ile Ser Trp Ile Ser Glu Leu  
 245 250 255

Tyr Gln Ser Thr Val Ile Tyr Met Leu Cys Glu Thr Ile Gly Val Phe  
 260 265 270

Ser Pro Ser Ser His Ser Phe Leu Leu Ile Leu Gly Asn Ala Lys Leu  
 275 280 285

Arg Gln Ala Phe Leu Leu Val Ala Ala Lys Val Trp Ala Lys Arg  
 290 295 300

<210> 40

<211> 909

<212> DNA

<213> Homo sapiens

<400> 40

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ctgtcctcag tcgataaact cctcattatc ttggcaatct ccagaattgg gctgatctgg      180
gaaatattag taagttgggt tttagctctg cattatctag ccatatttgt gtctggaaca      240
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agaaacacaa cttggaattt cagtatgagt gactttgaaa cattttcagt gtcggtcaaa      540
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gaccccagga ccaaggtcca tacaaatgcc ttgaaaattg tgatctcatt ccttttatte      720
tatgctagtt tctttctatg tgttctcata tcatggattt ctgagctgta tcagagcaca      780
gtgatctaca tgctttgtga gacgattgga gtcttctctc cttcaagcca ctcttttctt      840
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gctaaacga                                     909

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<210> 41

<211> 317

<212> PRT

<213> Homo sapiens

<400> 41

Met Gly Gly Val Ile Lys Ser Ile Phe Thr Phe Val Leu Ile Val Glu



1	5	10	15
Phe Ile Ile Gly Asn Leu Gly Asn Ser Phe Ile Ala Leu Val Asn Cys	20	25	30
Ile Asp Trp Val Lys Gly Arg Lys Ile Ser Ser Val Asp Arg Ile Leu	35	40	45
Thr Ala Leu Ala Ile Ser Arg Ile Ser Leu Val Trp Leu Ile Phe Gly	50	55	60
Ser Trp Cys Val Ser Val Phe Phe Pro Ala Leu Phe Ala Thr Glu Lys	65	70	75
Met Phe Arg Met Leu Thr Asn Ile Trp Thr Val Ile Asn His Phe Ser	85	90	95
Val Trp Leu Ala Thr Gly Leu Gly Thr Phe Tyr Phe Leu Lys Ile Ala	100	105	110
Asn Phe Ser Asn Ser Ile Phe Leu Tyr Leu Lys Trp Arg Val Lys Lys	115	120	125
Val Val Leu Val Leu Leu Leu Val Thr Ser Val Phe Leu Phe Leu Asn	130	135	140
Ile Ala Leu Ile Asn Ile His Ile Asn Ala Ser Ile Asn Gly Tyr Arg	145	150	155
Arg Asn Lys Thr Cys Ser Ser Asp Ser Ser Asn Phe Thr Arg Phe Ser	165	170	175
Ser Leu Ile Val Leu Thr Ser Thr Val Phe Ile Phe Ile Pro Phe Thr	180	185	190
Leu Ser Leu Ala Met Phe Leu Leu Leu Ile Phe Ser Met Trp Lys His	195	200	205
Arg Lys Lys Met Gln His Thr Val Lys Ile Ser Gly Asp Ala Ser Thr	210	215	220
Lys Ala His Arg Gly Val Lys Ser Val Ile Thr Phe Phe Leu Leu Tyr	225	230	235
Ala Ile Phe Ser Leu Ser Phe Phe Ile Ser Val Trp Thr Ser Glu Arg	245	250	255

Leu Glu Glu Asn Leu Ile Ile Leu Ser Gln Val Met Gly Met Ala Tyr  
 260 265 270

Pro Ser Cys His Ser Cys Val Leu Ile Leu Gly Asn Lys Lys Leu Arg  
 275 280 285

Gln Ala Ser Leu Ser Val Leu Leu Trp Leu Arg Tyr Met Phe Lys Asp  
 290 295 300

Gly Glu Pro Ser Gly His Lys Glu Phe Arg Glu Ser Ser  
 305 310 315

<210> 42  
 <211> 951  
 <212> DNA  
 <213> Homo sapiens

<400> 42  
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 atctcttcgg ttgatcggat cctcactgct ttggcaatct ctgaattag cctggtttgg 180  
 ttaatatctg gaagctggtg tgtgtctgtg tttttccag ctttatttgc cactgaaaaa 240  
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 agaaacaaga cttgcagttc tgattcaagt aactttacac gattttccag tcttattgta 540  
 ttaaccagca ctgtgttcat tttcataccc tttactttgt ccctggcaat gtttcttctc 600  
 ctcatcttct ccatgtggaa acatcgcaag aagatgcagc aactgtcaa aatatccgga 660  
 gagccagca ccaaagccca cagaggagt aaaagtgtga tcactttctt cctactctat 720  
 gccattttct ctctgtcttt tttcatatca gtttggacct ctgaaagggt ggaggaaaat 780  
 ctaattatc tttcccagg gatgggaatg gcttatcctt catgtcactc atgtgttctg 840  
 attcttggaa acaagaagct gagacaggcc tctctgtcag tgctactgtg gctgaggtac 900  
 atgttcaaag atggggagcc ctcaggtcac aaagaattta gagaatcatc t 951

<210> 43  
 <211> 291  
 <212> PRT  
 <213> Homo sapiens

<400> 43

Met Ile Pro Ile Gln Leu Thr Val Phe Phe Met Ile Ile Tyr Val Leu

1	5	10	15
Glu Ser Leu Thr Ile Ile Val Gln Ser Ser Leu Ile Val Ala Val Leu	20	25	30
Gly Arg Glu Trp Leu Gln Val Arg Arg Leu Met Pro Val Asp Met Ile	35	40	45
Leu Ile Ser Leu Gly Ile Ser Arg Phe Cys Leu Gln Trp Ala Ser Met	50	55	60
Leu Asn Asn Phe Cys Ser Tyr Phe Asn Leu Asn Tyr Val Leu Cys Asn	65	70	75
Leu Thr Ile Thr Trp Glu Phe Phe Asn Ile Leu Thr Phe Trp Leu Asn	85	90	95
Ser Leu Leu Thr Val Phe Tyr Cys Ile Lys Val Ser Ser Phe Thr His	100	105	110
His Ile Phe Leu Trp Leu Arg Trp Arg Ile Leu Arg Leu Phe Pro Trp	115	120	125
Ile Leu Leu Gly Ser Leu Met Ile Thr Cys Val Thr Ile Ile Pro Ser	130	135	140
Ala Ile Gly Asn Tyr Ile Gln Ile Gln Leu Leu Thr Met Glu His Leu	145	150	155
Pro Arg Asn Ser Thr Val Thr Asp Lys Leu Glu Asn Phe His Gln Tyr	165	170	175
Gln Phe Gln Ala His Thr Val Ala Leu Val Ile Pro Phe Ile Leu Phe	180	185	190
Leu Ala Ser Thr Ile Phe Leu Met Ala Ser Leu Thr Lys Gln Ile Gln	195	200	205
His His Ser Thr Gly His Cys Asn Pro Ser Met Lys Ala His Phe Thr	210	215	220
Ala Leu Arg Ser Leu Ala Val Leu Phe Ile Val Phe Thr Ser Tyr Phe	225	230	235
Leu Thr Ile Leu Ile Thr Ile Ile Gly Thr Leu Phe Asp Lys Arg Cys	245	250	255

Trp Leu Trp Val Trp Glu Ala Phe Val Tyr Ala Phe Ile Leu Met His  
 260 265 270

Ser Thr Ser Leu Met Leu Ser Ser Pro Thr Leu Lys Arg Ile Leu Lys  
 275 280 285

Gly Lys Cys  
 290

<210> 44  
 <211> 873  
 <212> DNA  
 <213> Homo sapiens

<400> 44  
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 aggctgatgc ctgtggacat gattctcatc agcctgggca tctctcgctt ctgtctacag 180  
 tgggcatcaa tgctgaacaa tttttgctcc tattttaatt tgaattatgt actttgcaac 240  
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 gtgttctact gcatcaaggt ctcttcttcc acccatcaca tctttctctg gctgaggtgg 360  
 agaattttga gggtgtttcc ctggatatta ctgggttctc tgatgattac ttgtgtaaca 420  
 atcatccctt cagctattgg gaattacatt caaattcagt tactcaccat ggagcatcta 480  
 ccaagaaaca gcaactgtaac tgacaaactt gaaaattttc atcagtatca gttccaggct 540  
 catacagttg cattgggtat tcctttcatc ctgttctctg cctccaccat ctttctcatg 600  
 gcatcactga ccaagcagat acaacatcat agcactgggc actgcaatcc aagcatgaaa 660  
 gcgcacttca ctgccctgag gtcccttgcc gtcttattta ttgtgtttac ctcttacttt 720  
 ctaaccatac tcatcaccat tataggtact ctatttgata agagatgttg gttatgggctc 780  
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 cctacgttga aaaggattct aaagggaaag tgc 873

<210> 45  
 <211> 316  
 <212> PRT  
 <213> Homo sapiens

<400> 45

Met Met Gly Leu Thr Glu Gly Val Phe Leu Ile Leu Ser Gly Thr Gln  
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Phe Thr Leu Gly Ile Leu Val Asn Cys Phe Ile Glu Leu Val Asn Gly  
 20 25 30

Ser Ser Trp Phe Lys Thr Lys Arg Met Ser Leu Ser Asp Phe Ile Ile  
35 40 45

Thr Thr Leu Ala Leu Leu Arg Ile Ile Leu Leu Cys Ile Ile Leu Thr  
50 55 60

Asp Ser Phe Leu Ile Glu Phe Ser Pro Asn Thr His Asp Ser Gly Ile  
65 70 75 80

Ile Met Gln Ile Ile Asp Val Ser Trp Thr Phe Thr Asn His Leu Ser  
85 90 95

Ile Trp Leu Ala Thr Cys Leu Gly Val Leu Tyr Cys Leu Lys Ile Ala  
100 105 110

Ser Phe Ser His Pro Thr Phe Leu Trp Leu Lys Trp Arg Val Ser Arg  
115 120 125

Val Met Val Trp Met Leu Leu Gly Ala Leu Leu Leu Ser Cys Gly Ser  
130 135 140

Thr Ala Ser Leu Ile Asn Glu Phe Lys Leu Tyr Ser Val Phe Arg Gly  
145 150 155 160

Ile Glu Ala Thr Arg Asn Val Thr Glu His Phe Arg Lys Lys Arg Ser  
165 170 175

Glu Tyr Tyr Leu Ile His Val Leu Gly Thr Leu Trp Tyr Leu Pro Pro  
180 185 190

Leu Ile Val Ser Leu Ala Ser Tyr Ser Leu Leu Ile Phe Ser Leu Gly  
195 200 205

Arg His Thr Arg Gln Met Leu Gln Asn Gly Thr Ser Ser Arg Asp Pro  
210 215 220

Thr Thr Glu Ala His Lys Arg Ala Ile Arg Ile Ile Leu Ser Phe Phe  
225 230 235 240

Phe Leu Phe Leu Leu Tyr Phe Leu Ala Phe Leu Ile Ala Ser Phe Gly  
245 250 255

Asn Phe Leu Pro Lys Thr Lys Met Ala Lys Met Ile Gly Glu Val Met  
260 265 270

Thr Met Phe Tyr Pro Ala Gly His Ser Phe Ile Leu Ile Leu Gly Asn  
275 280 285

Ser Lys Leu Lys Gln Thr Phe Val Val Met Leu Arg Cys Glu Ser Gly  
 290 295 300

His Leu Lys Pro Gly Ser Lys Gly Pro Ile Phe Ser  
 305 310 315

<210> 46  
 <211> 948  
 <212> DNA  
 <213> Homo sapiens

<400> 46  
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 tgtgagtctg gtcacttgaa gcttgatcc aagggaccca ttttctct 948

<210> 47  
 <211> 314  
 <212> PRT  
 <213> Homo sapiens

<400> 47

Met Ala Thr Glu Leu Asp Lys Ile Phe Leu Ile Leu Ala Ile Ala Glu  
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Phe Ile Ile Ser Met Leu Gly Asn Val Phe Ile Gly Leu Val Asn Cys  
 20 25 30

Ser Glu Gly Ile Lys Asn Gln Lys Val Phe Ser Ala Asp Phe Ile Leu  
35 40 45

Thr Cys Leu Ala Ile Ser Thr Ile Gly Gln Leu Leu Val Ile Leu Phe  
50 55 60

Asp Ser Phe Leu Val Gly Leu Ala Ser His Leu Tyr Thr Thr Tyr Arg  
65 70 75 80

Leu Gly Lys Thr Val Ile Met Leu Trp His Met Thr Asn His Leu Thr  
85 90 95

Thr Trp Leu Ala Thr Cys Leu Ser Ile Phe Tyr Phe Phe Lys Ile Ala  
100 105 110

His Phe Pro His Ser Leu Phe Leu Trp Leu Arg Trp Arg Met Asn Gly  
115 120 125

Met Ile Val Met Leu Leu Ile Leu Ser Leu Phe Leu Leu Ile Phe Asp  
130 135 140

Ser Leu Val Leu Glu Ile Phe Ile Asp Ile Ser Leu Asn Ile Ile Asp  
145 150 155 160

Lys Ser Asn Leu Thr Leu Tyr Leu Asp Glu Ser Lys Thr Leu Phe Asp  
165 170 175

Lys Leu Ser Ile Leu Lys Thr Leu Leu Ser Leu Thr Ser Phe Ile Pro  
180 185 190

Phe Ser Leu Ser Leu Thr Ser Leu Leu Phe Leu Phe Leu Ser Leu Val  
195 200 205

Arg His Thr Arg Asn Leu Lys Leu Ser Ser Leu Gly Ser Arg Asp Ser  
210 215 220

Ser Thr Glu Ala His Arg Arg Ala Met Lys Met Val Met Ser Phe Leu  
225 230 235 240

Phe Leu Phe Ile Val His Phe Phe Ser Leu Gln Val Ala Asn Trp Ile  
245 250 255

Phe Phe Met Leu Trp Asn Asn Lys Tyr Ile Lys Phe Val Met Leu Ala  
260 265 270

Leu Asn Ala Phe Pro Ser Cys His Ser Phe Ile Leu Ile Leu Gly Asn  
275 280 285

Ser Lys Leu Arg Gln Thr Ala Val Arg Leu Leu Trp His Leu Arg Asn  
 290 295 300

Tyr Thr Lys Thr Pro Asn Ala Leu Pro Leu  
 305 310

<210> 48  
 <211> 942  
 <212> DNA  
 <213> Homo sapiens

<400> 48  
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 gtcttctcag ctgacttcat cctcacctgc ttggctatct ccacaattgg acaactgttg 180  
 gtgatactgt ttgattcatt tctagtggga cttgcttcac atttatatac cacatataga 240  
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 catcttagga actatacaaa aacaccaa at gctttacctt tg 942

<210> 49  
 <211> 318  
 <212> PRT  
 <213> Homo sapiens

<400> 49

Met Asn Gly Asp His Met Val Leu Gly Ser Ser Val Thr Asp Lys Lys  
 1 5 10 15

Ala Ile Ile Leu Val Thr Ile Leu Leu Leu Leu Arg Leu Val Ala Ile  
 20 25 30



Ala Gly Asn Gly Phe Ile Thr Ala Ala Leu Gly Val Glu Trp Val Leu  
35 40 45

Arg Arg Met Leu Leu Pro Cys Asp Lys Leu Leu Val Ser Leu Gly Ala  
50 55 60

Ser Arg Phe Cys Leu Gln Ser Val Val Met Gly Lys Thr Ile Tyr Val  
65 70 75 80

Phe Leu His Pro Met Ala Phe Pro Tyr Asn Pro Val Leu Gln Phe Leu  
85 90 95

Ala Phe Gln Trp Asp Phe Leu Asn Ala Ala Thr Leu Trp Ser Ser Thr  
100 105 110

Trp Leu Ser Val Phe Tyr Cys Val Lys Ile Ala Thr Phe Thr His Pro  
115 120 125

Val Phe Phe Trp Leu Lys His Lys Leu Ser Gly Trp Leu Pro Trp Met  
130 135 140

Leu Phe Ser Ser Val Gly Leu Ser Ser Phe Thr Thr Ile Leu Phe Phe  
145 150 155 160

Ile Gly Asn His Arg Met Tyr Gln Asn Tyr Leu Arg Asn His Leu Gln  
165 170 175

Pro Trp Asn Val Thr Gly Asp Ser Ile Arg Ser Tyr Cys Glu Lys Phe  
180 185 190

Tyr Leu Phe Pro Leu Lys Met Ile Thr Trp Thr Met Pro Thr Ala Val  
195 200 205

Phe Phe Ile Cys Met Ile Leu Leu Ile Thr Ser Leu Gly Arg His Arg  
210 215 220

Lys Lys Ala Leu Leu Thr Thr Ser Gly Phe Arg Glu Pro Ser Val Gln  
225 230 235 240

Ala His Ile Lys Ala Leu Leu Ala Leu Leu Ser Phe Ala Met Leu Phe  
245 250 255

Ile Ser Tyr Phe Leu Ser Leu Val Phe Ser Ala Ala Gly Ile Phe Pro  
260 265 270

Pro Leu Asp Phe Lys Phe Trp Val Trp Glu Ser Val Ile Tyr Leu Cys  
275 280 285

Ala Ala Val His Pro Ile Ile Leu Leu Phe Ser Asn Cys Arg Leu Arg  
 290 295 300

Ala Val Leu Lys Ser Arg Arg Ser Ser Arg Cys Gly Thr Pro  
 305 310 315

<210> 50  
 <211> 957  
 <212> DNA  
 <213> Homo sapiens

<400> 50  
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 ggaagacaca ggaagaaggc tctccttaca acctcaggat tccgagagcc cagtgtgcag 720  
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 tgggagtcag tgatttatct gtgtgcagca gttcacccca tcattctgct cttcagcaac 900  
 tgcaggctga gagctgtgct gaagagtcgt cgcttctcaa ggtgtgggac accttga 957

<210> 51  
 <211> 33  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Primer comprising EcoRI restriction site for PCR amplification of hTAS2R16

<400> 51  
 cctgggaatt ttttaatatc cttacattct ggt 33

<210> 52

<211> 19  
<212> DNA  
<213> Artificial

<220>  
<223> Primer comprising NotI restriction site for PCR amplification of  
hTAS2R16

<400> 52  
gaagcgcgct ttcattgctt

19